

IN THE CLAIMS:

None of the claims have been amended herein. All of the pending claims 1 through 21 are presented below. This listing of claims is contained herein for convenience only and will replace all prior versions and listings of claims in the application. Please enter these claims as previously amended.

Listing of Claims:

1. (Previously presented) A method for constructing a cutting element for a drill bit used in drilling subterranean formations, comprising:
forming a substrate of a hard material, the substrate having at least one internal cavity and an attachment surface;
filling the at least one internal cavity with a substantially incompressible packed, particulate filler material to a level at least coincident with the attachment surface;
attaching a superabrasive table to the attachment surface and over the substantially incompressible packed, particulate filler material at an elevated temperature of between about 1450 and 1600°C and at a high pressure of at least about 50 kilobar while maintaining a presence of the at least one internal cavity of the substrate with the substantially incompressible packed, particulate filler material; and
removing the filler material from the at least one internal cavity.

2. (Original) The method of claim 1, wherein removing the filler material comprises at least one of mechanically removing the filler material and dissolving the filler material.

3. (Previously presented) The method of claim 1, wherein removing the filler material comprises removing a filler material which remains a solid at the elevated temperature and the high pressure and becomes fluid at a lesser temperature and a lesser pressure.

4. (Original) The method of claim 1, further comprising selecting the filler material from the group consisting of a crystalline salt, halite, sodium chloride, boron nitride, a volcanic material, and Pyrofolyte material.

5. (Previously presented) The method of claim 1, wherein forming the substrate of a hard material comprises forming the substrate including the attachment surface having an outer periphery and further comprising:
forming at least one channel in the attachment surface of the substrate, the at least one channel having an outlet and an inlet, the outlet being proximate the outer periphery and the inlet being in communication with the at least one internal cavity;
filling the at least one channel with the substantially incompressible, packed particulate filler material to a level at least coincident with the attachment surface prior to attaching the superabrasive table to the attachment surface and maintaining a presence of the at least one channel during the attachment of the superabrasive table to the attachment surface with the substantially incompressible packed, particulate filler material; and
removing the filler material from the at least one channel after attaching the superabrasive table to the attachment surface.

6. (Original) The method of claim 5, wherein removing the filler material comprises at least one of mechanically removing the filler material and dissolving the filler material.

7. (Previously presented) The method of claim 5, wherein removing the filler material comprises removing the filler material which remains a solid at the elevated temperature and the high pressure and becomes fluid at a lesser temperature and a lesser pressure.

8. (Original) The method of claim 5, further comprising selecting the filler material from the group consisting of a crystalline salt, halite, sodium chloride, boron nitride, a volcanic material, and Pyrofolyte material.

9. (Previously presented) The method of claim 1, wherein attaching the superabrasive table to the attachment surface further comprises:
forming the superabrasive table including a bonding surface having an outer periphery and further including at least one channel formed within the bonding surface, the at least one channel configured to have an inlet, and an outlet proximate the outer periphery;
filling the at least one channel with the substantially incompressible packed, particulate filler material to a level at least coincident to the bonding surface prior to attaching the superabrasive table to the attachment surface;
attaching the superabrasive table to the substrate with the inlet of the at least one channel in communication with the at least one internal cavity of the substrate while maintaining a presence of the at least one channel with the substantially incompressible packed, particulate filler material; and
removing the filler material from the at least one channel.

10. (Original) The method of claim 9, wherein removing the filler material comprises at least one of mechanically removing the filler material and dissolving the filler material.

11. (Previously presented) The method of claim 9, wherein removing the filler material comprises removing the filler material which remains a solid at the elevated temperature and the high pressure and becomes fluid at a lesser temperature and a lesser pressure.

12. (Original) The method of claim 9, further comprising selecting the filler material from the group consisting of a crystalline salt, halite, sodium chloride, boron nitride, a volcanic material, and Pyrofolyte material.

13. (Previously presented) The method of claim 1, wherein forming the substrate of a hard material comprises forming the substrate including the attachment surface having an outer periphery and further comprising:

forming at least one channel in the attachment surface of the substrate, the at least one channel having an outlet and an inlet, the outlet being proximate the outer periphery of the attachment surface;

forming the superabrasive table to include a bonding surface having an outer periphery and at least one channel in the bonding surface, the at least one channel in the bonding surface having an inlet and an outlet, the outlet being proximate the outer periphery of the bonding surface;

placing the superabrasive table with the bonding surface over the attachment surface of the substrate with the at least one channel in the bonding surface and the at least one channel in the attachment surface in alignment so as to define at least one passage lying between the superabrasive table and the substrate;

filling the at least one passage with the substantially incompressible, packed particulate filler material;

attaching the bonding surface to the attachment surface at the elevated temperature and at the high pressure while maintaining a presence of the at least one passage with the substantially incompressible packed, particulate filler material and communication between the at least one internal cavity and the at least one passage; and

removing the filler material from the at least one passage and the at least one internal cavity of the substrate.

14. (Original) The method of claim 13, wherein removing the filler material comprises at least one of mechanically removing the filler material and dissolving the filler material.

15. (Previously presented) The method of claim 13, wherein removing the filler material comprises removing the filler material which remains a solid at the elevated temperature and the high pressure and becomes fluid at a lesser temperature and a lesser pressure.

16. (Original) The method of claim 13, further comprising selecting the filler material from the group consisting of a crystalline salt, halite, sodium chloride, boron nitride, a volcanic material, and Pyrofolyte material.

17. (Previously presented) A method of constructing a cutting element for a drill bit used in drilling subterranean formations, comprising:
forming a primary substrate of a preselected hard material, the primary substrate having at least one internal cavity and an attachment surface;
forming a secondary substrate of a preselected hard material, the secondary substrate having an outer periphery and at least one channel therein, the at least one channel having an inlet and an outlet, the outlet being proximate to the outer periphery;
placing the secondary substrate on the attachment surface so as to create communication between the outlet of the at least one channel and the at least one internal cavity;
filling the at least one internal cavity and the at least one channel with a substantially incompressible packed, particulate filler material;
forming a superabrasive table on the secondary substrate, and forming the secondary substrate to the attachment surface at an elevated temperature of between about 1450 and 1600°C and at a high pressure of at least about 50 kilobar while maintaining a presence of the at least one internal cavity of the primary substrate and the at least one channel of the secondary substrate with the substantially incompressible filler material; and
removing the filler material from the at least one internal cavity and the at least one channel.

18. (Original) The method of claim 17, wherein removing the filler material comprises at least one of mechanically removing the filler material and dissolving the filler material.

19. (Previously presented) The method of claim 17, wherein removing the filler material comprises removing the filler material which remains a solid at the elevated temperature and the high pressure and becomes fluid at a lesser temperature and a lesser pressure.

20. (Original) The method of claim 17, further comprising selecting the filler material from the group consisting of a crystalline salt, halite, sodium chloride, boron nitride, a volcanic material, and Pyrofolyte material.

21. (Previously presented) A method for constructing a cutting element for a drill bit used in drilling subterranean formations, comprising:

forming a substrate of tungsten carbide, the substrate having at least one internal cavity, an attachment surface, and at least one exterior cavity at the attachment surface, the at least one exterior cavity being in communication with the at least one internal cavity;

placing the substrate in a holding receptacle;

filling the at least one internal cavity and the at least one exterior cavity to a level at least coincident with the attachment surface with a substantially incompressible particulate filler material selected from the group consisting of a crystalline salt, halite, sodium chloride, boron nitride, a volcanic material, and Pyrofollyte material;

packing the particulate filler material to a predetermined density within the at least one internal cavity and the at least one exterior cavity;

disposing a layer of particulate diamond crystals atop the attachment surface and over the packed particulate filler material in the at least one exterior cavity;

subjecting the holding receptacle, the substrate, the packed particulate filler material and the layer of particulate diamond crystals to an elevated temperature of between about 1450 and 1600°C and to a high pressure of at least about 50 kilobar while maintaining a presence of the at least one internal cavity and the at least one exterior cavity of the substrate with the packed, particulate filler material for a sufficient time to form a superabrasive table securely bonded to the attachment surface from the layer of particulate diamond crystals;

removing the cutting element from the holding receptacle; and

removing the filler material from the at least one internal cavity and the at least one exterior cavity.